

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BOX PATENT APPLICATION

The Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is a **new utility** patent
application of: **Wen-Li KUO**

Title of Invention: **IMPROVED STRUCTURE WATER SPRAYER LONG
TUBE AND WATER PIPE CONNECTOR**

Enclosed are:

A specification and 1 claim.

Five (5) sheets of formal drawings (Figs. 1-5).

A Combined Declaration and Power of Attorney

Verified statement to establish **SMALL** Entity Status
under 37 CFR § 1.9 and 37 CFR § 1.27.

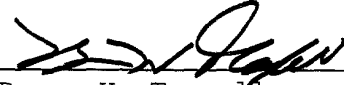
Change of Address.

The filing fee has been calculated as shown below:

FOR:	NO. FILED	NO. EXTRA	<u>SMALL</u> <u>ENTITY</u> <u>RATE FEE</u>	<u>LARGE</u> <u>ENTITY</u> <u>RATE FEE</u>
BASIC FEE			<u>\$345.00</u>	<u>\$690.00</u>
TOTAL CLAIMS	1 - 20 =	<u>0</u>	\$ 9. <u> </u>	\$18. <u> </u>
INDEP CLAIMS	1 - 3 =	<u>0</u>	\$ 39. <u> </u>	\$78. <u> </u>
___ MULTIPLE DEPENDENT CLAIMS			<u>\$130. <u> </u></u>	<u>\$260. <u> </u></u>
		TOTAL	<u>\$345.00</u>	<u>\$ <u> </u></u>

- ☒ A check in the amount of \$345.00 to cover the government filing fee.
- ☒ The Commissioner is hereby authorized to charge any additional fees associated with this communication, including patent application filing fees and processing fees under 37 CFR 1.16 and 37 CFR 1.17 or credit any overpayment to **Deposit Account No. 04-1447**. A duplicate copy of this paper is enclosed.

Date: May 19, 2000


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Applicant or Patentee . Wen-Li Kuo Attorney's
Serial or Patent No.: _____ Docket No BHT/3110/50
Filed or Issued: _____

For: Improved Structure Water Sprayer Long Tube and Water Pipe Connector

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY

STATUS [37 CFR §§1.9 (f) and 1.27(b)]- INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR §1.9 (c) for purposes of paying reduced fees under Sections 41(a) and 41 (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to Invention described in the above-captioned:

☐ PATENT

☐ APPLICATION

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR §1.9 (c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR §1.9(d) or a non-profit organization under 37 CFR §1.9 (e) .

Each person, concern or organization to which I have assigned, granted, conveyed or licensed or am under an obligation under contract or law to assign, grant, convey or license any rights in the invention is listed below:

☐ no such person, concern or organization

☐ person, concerns or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the Invention averring to their status as small entities (37 CFR §§1.27).

FULL NAME. _____

ADDRESS: _____

☐ INDIVIDUAL ☐ * SMALL BUSINESS CONCERN ☐ NON-PROFIT ORGANIZATION

FULL NAME _____

ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NON-PROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of my change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate [37 CFR § 1 28(b)].

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Wen-Li Kuo

NAME OF NVENTOR

Wen-Li Kuo

NAME OF NVENTOR

NAME OF NVENTOR

Signature of Inventor

Signature of Inventor

Signature of Inventor

March 25, 2000

Date

Date

Date

Improved Structure Water Sprayer Long Tube and Water Pipe Connector

BACKGROUND OF THE INVENTION

1) FIELD OF THE INVENTION

The invention herein relates to an improved structure water sprayer long
5 tube and water pipe connector that improves upon the easy misplacement
drawbacks of conventional water sprayer long tube and connector conjunction
structures and the lack of a simple water sprayer angle adjustment capability, with
the structure of the invention herein providing for the effective improvement of the
conventional shortcomings included among the innovative features of the present
10 invention.

2) DESCRIPTION OF THE PRIOR ART

Conventional water sprayers, as indicated in FIG. 1, FIG. 2, and FIG. 3, are
comprised of a sprayer head 2 having a numerous fine water output holes in a
patterned arrangement and a long tube 3 conjoined to the bottom end of the sprayer
15 head 2, enabling the bottom end of the long tube 3 of the sprayer head 2 to be
coupled to the high pressure water flow of a water pipe connector (a conventional
structure not shown in the drawings) and thereby providing a structure for the
stoppage and control of the water flow; a sleeve 4 is disposed between a connector

5 and the water pipe connector to serve as the switching control of the connector 5 as well as a conjunction structure; threads 41 are formed along the interior section of the sleeve 4 and at its top end is the inward extending lip 421 of an insertion hole 42 and, furthermore, the said insertion hole 42 provides for inserting the bottom end of the water sprayer long tube 3, and also formed at the bottom end of the water sprayer long tube 3 is a flange 31, such that when the said flange 31 is constricted by the inward extending lip 421 at the top end of sleeve 4, separation from the top end of the sleeve is precluded and, finally, a water sealing ring 43 is ensconced in the interior section of the sleeve 4; serving as a switchable component, the connector 5 is equipped at the approximate center of its interior section with a partition plate 51 and, furthermore, a water output hole 511 is formed in the center of the partition plate 51 and respectively installed from its bottom end is a water stoppage and controlling ball valve 52 and a water sealing ring 53, with external threads 54 formed along its outer top end providing for fastening to the threads 41 formed along the interior section of the sleeve 4, and internal threads 55 are formed along its interior bottom section to enable coupling to the water pipe connector (not shown in the drawings); given the assembly of the said structure, when entire water sprayer is to be coupled to the high pressure water flow of the water pipe, the water pipe connector only has to be directly fastened to the internal threads 55 formed along its interior bottom section of the

connector 5 to achieve effective coupling.

However, in the said type of structural assembly that provides for the coupling of the long tube 3 of the water sprayer to the water pipe connector; first, since the external threads 54 at the upper section and exterior of the connector 5 are fastened to the sleeve 4 and the connector 5 and the sleeve 4 are two components, according to the experience of the applicant gained while actually engaged in the production and marketing of such devices, a major shortcoming is that the said connector 5 is easily disconnected and misplaced; second, since the external threads 54 along the top section of the connector are fastened to the threads 41 formed along the interior section of the sleeve 4 to conjoin them into a single structural entity, such that when the high pressure water flow initially passes through the water pipe connector and then through the interior section of the connector 5, through the sleeve 4, through the long tube 3, and is finally discharged from the front end surface of the sprayer head 2, the high pressure water flow does not result in leakage from the conjoinment between the connector 5 and the sleeve 4, enabling the upper section of the connector 5 to remain tightened to the threads 41 formed along the interior section of the sleeve 4 such that the top surface of the connector 5 is firmly against the water sealing ring 43 inside the sleeve 4 and, furthermore, since the flange 31 formed at the bottom of the long tube 3 originally constrained by the inward extending lip 421 at the top

end of the sleeve similarly remains tightly secured, the entire long tube 3 is firmly fixed to the end of the sprayer head 2, enabling the entire water sprayer to be tightly fastened together such that when the internal threads 55 formed along the interior bottom section of the water sprayer are screw fastened to the threads on the water pipe connector, the water sprayer angle of the entire coupled water pipe connector is at a set angle and the said angle is not necessarily the grasping angle preferred by the user, resulting in inconvenience during actual sprayer utilization, a shortcoming that awaits improvement.

Therefore, in view of the existent said shortcomings of the conventional structure that await improvement, the inventor of the invention, based on years of experience gained from engagement in various water application, landscaping, and other related hardware marketing, production, and assembly as well as after-sales feedback from consumers, conducted extensive research informed by the said factors that culminated in the development of the invention herein which is hereby submitted for patent application.

SUMMARY OF THE INVENTION

The primary objective of the invention herein is to provide an improved structure water sprayer long tube and water pipe connector, specifically referring to the arrangement between the long tube and the water pipe connector of the

water sprayer, wherein directly disposed from the water inlet end in respective order are a Teflon water sealing ring, a ball valve that opens or closes the path of water flow, and another Teflon water sealing ring that couple the said two components together; of which, the opening of the water outlet end is of a smaller inner diameter than that of the opening at the water inlet end, and a water sealing ring is ensconced along the inner diameter edge of the said water outlet end and, furthermore, after the long tube is installed into the inner diameter of the water outlet end, a flange formed at the bottom end of the long tube in the water inlet end of the connector is secured and constrained inside the connector, with the constraining of the long tube flange of the water sprayer enabling it to become assembled with the connector into a single structural entity that cannot be disconnected, such that after the water sprayer bottom end is first assembled to the connector and when the connector bottom end is assembled to the water pipe connector for utilization, in addition to allowing the user to easily adjust the angle of the water sprayer as desired, the separation and loss of the entire connector from the long tube of the water sprayer is effectively prevented, which is among the innovative features of the invention herein.

Another objective of the invention herein is to provide an improved structure water sprayer long tube and water pipe connector that provides for a connector between the long tube of the water sprayer and the water pipe connector

and after the long tube of the water sprayer is inserted into the opening of the water outlet end, since an outwardly extending flange is formed at its bottom end, this constrains it at the interior section, following which a Teflon water sealing ring, a ball valve that controls water by opening closing the path of flow, and another Teflon water sealing ring are respectively installed in the water inlet end to assemble a connector structure; additionally, given the water sealing washers ensconced inside the opening of the water outlet end and, furthermore, the friction-resistance of Teflon, when the interior bottom section of the connector is fastened to the water pipe connector, the long tube of the said water sprayer can as a result be easily adjusted to a desired utilization angle to facilitate spraying operation performance, which is among the innovative features of the invention herein.

To further understand the structure, innovative features, and operation of the invention herein for purposes of review and reference, the brief description of the drawings below is followed by the detailed description of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an isometric drawing of a conventional water sprayer as assembled to the sleeve and the connector.

Figure 2 is an exploded drawing of the long tube, sleeve, and connector of a conventional water sprayer.

Figure 3 is a cross-sectional drawing of the long tube, sleeve, and connector of a conventional water sprayer.

Figure 4 is an exploded drawing of the structural details between the long tube and the connector of the water sprayer invention herein.

5 Figure 5 is a cross-sectional drawing of the structural details between the long tube and the connector of the water sprayer invention herein.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 4 and FIG. 5, the structure of the conjoined long tube 3 and water pipe connector of the invention herein consists of a connector 6
10 comprised of internal threads 61 tapped at the bottom section of its water inlet end followed in respective order by a Teflon water sealing ring 62, a ball valve 63 that opens or closes the path of water flow, and a Teflon water sealing ring 64 that couple the said two components together; the most innovative aspect of the invention herein is that the opening of the water outlet end 65 is of a smaller inner
15 diameter than that of the opening at the water inlet end, and a water sealing ring 66 is ensconced along the inner diameter edge of the said water outlet end 65 and, furthermore, after the long tube 3 is installed into the inner diameter of the water outlet end 65, a flange 31 formed at the bottom end of the long tube 3 in the water inlet end of the connector 6 is secured and constrained inside the connector 6, with

the constraining of the long tube 3 flange 31 of the water sprayer enabling it to become assembled with the connector 4 into a single structural entity that cannot be disconnected, such that after the water sprayer bottom end is first assembled to the connector 6 and when the connector 6 bottom end is assembled to the water
5 pipe connector for utilization, in addition to allowing the user to easily adjust the angle of the water sprayer desired, the separation and loss of the entire connector 6 from the long tube 3 of the water sprayer is prevented, thereby effectively enhancing the practicality of the present invention.

In summation of the foregoing section, since the invention herein is simpler
10 and more advantageous than the conventional structure and, furthermore, complies with new patent application requirements, the present invention is submitted to the patent bureau for review and the granting of the commensurate patent rights.

CLAIMS

1. An improved structure water sprayer long tube and water pipe connector, specifically referring to the arrangement between the long tube and the water pipe connector of the water sprayer, wherein directly tapped along the bottom section of
- 5 the said connector are internal threads that are followed in consecutive order from its water inlet end by a Teflon water sealing ring, a ball valve, and another Teflon water sealing ring for coupling the said two components together, the innovations of which include: the opening of the water outlet end is of a smaller inner diameter than that of the opening at the water inlet end, and a water sealing ring is
- 10 ensconced along the inner diameter edge of the said water outlet end and, furthermore, after the said long tube is installed into the inner diameter of the said water outlet end, a flange formed at the bottom end of the said long tube in the water inlet end of the said connector is secured and constrained inside the said connector, with the constraining of the said long tube flange of the water sprayer
- 15 enabling it to become assembled with the said connector into a single structural entity that cannot be disconnected, such that after the water sprayer bottom end is first assembled to the said connector and when the said connector bottom end is assembled to the water pipe connector for utilization, in addition to allowing the user to easily adjust the angle of the water sprayer desired, the separation and loss

of the entire said connector from the said long tube of the water sprayer is effectively prevented.

ABSTRACT

An improved structure water sprayer long tube and water pipe connector, specifically referring to the arrangement between the long tube and the water pipe connector of the water sprayer, wherein directly formed along the bottom section of the connector are internal threads that are followed in respective order from its water inlet end by a Teflon water sealing ring, a ball valve, and another Teflon water sealing ring for coupling the two components. The innovations are that the opening of the water outlet end is of a smaller inner diameter than that of the opening at the water inlet end and a water sealing ring is ensconced along the inner diameter edge of the water outlet end. Furthermore, after the long tube is installed into the inner diameter of the water outlet end, a flange formed at the bottom end of the long tube in the water inlet end of the connector is secured and constrained inside the connector, with the constraining of the long tube flange of the water sprayer enabling it to become assembled with the connector into a single structural entity that cannot be disconnected. Thus, after the water sprayer bottom end is first assembled to the connector and when the connector bottom end assembled to the water pipe connector is utilized, in addition to allowing the user to easily adjust the angle of the water sprayer, the separation and loss of the entire connector from the long tube of the water sprayer is effectively prevented.

Fig. 1 is a schematic diagram of a cable. It shows a cable head 2 at the top, connected to a cable body 3. The cable body 3 is a long, thin, curved line. At the bottom, the cable body 3 is connected to a cable head 4, which is a thick, cylindrical component. A cable body 5 is shown extending from the cable head 4.

FIG1
PRIOR ART

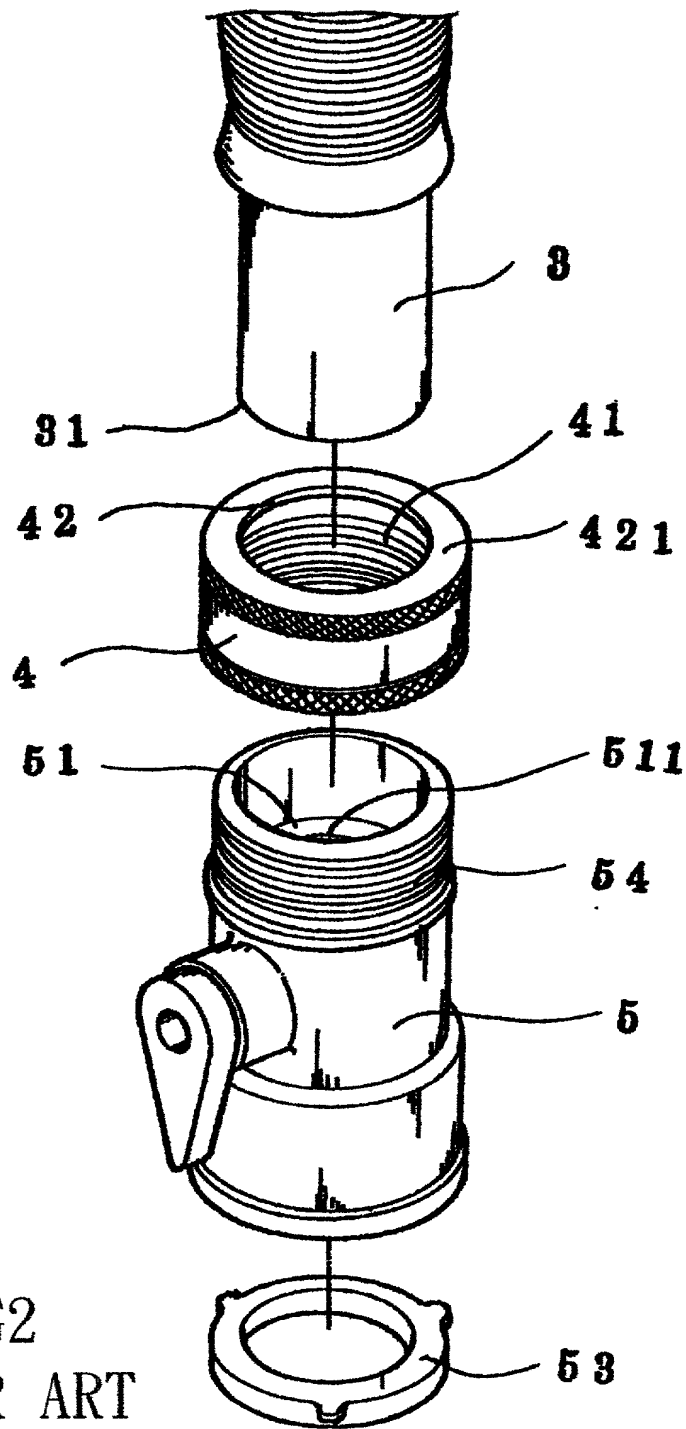


FIG2
PRIOR ART

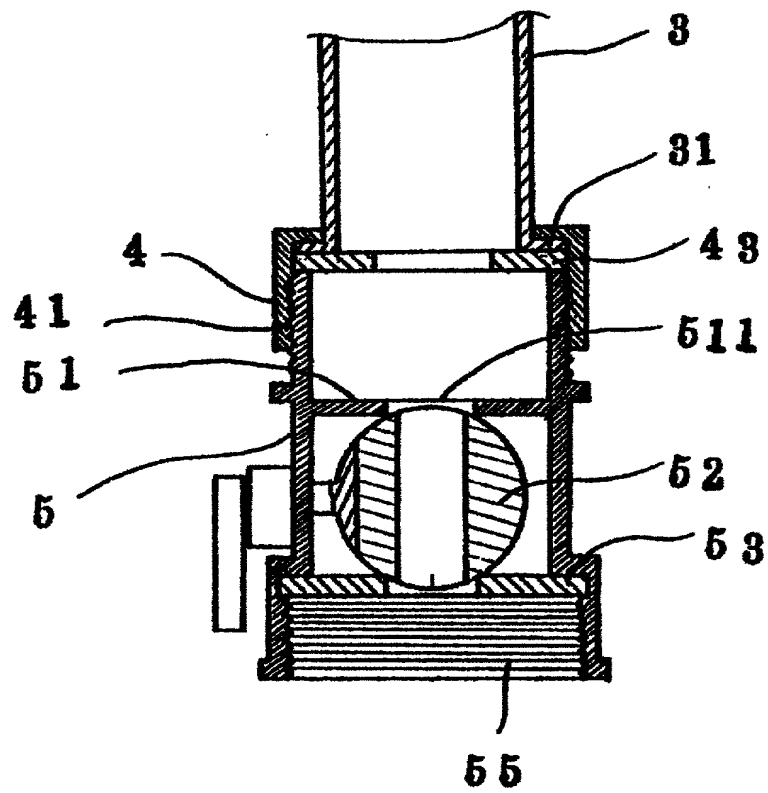


FIG3
PRIOR ART

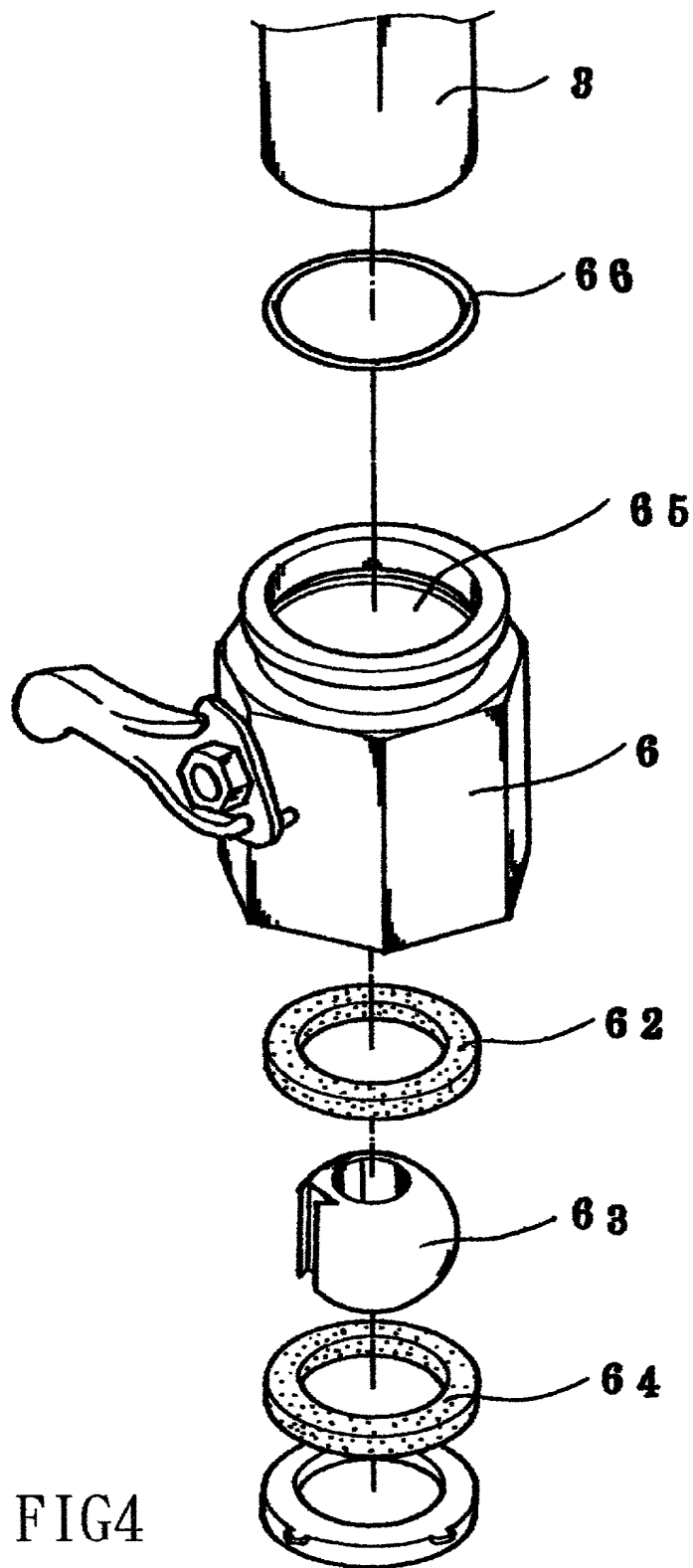


FIG4

ATTORNEY
DOCKET BHT/3110/50

My /Our residence, post office address and citizenship are as stated below next to my name.

Improved Structure Water Sprayer Long Tube and Water Pipe Connector
the specification of which (check one)

* is attached hereto

_____ was filed on _____ as Application Serial No. _____

and with amendments through

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim.

I acknowledge the duty to disclose information which may be material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below may foreign application for patent or inventor's certified having a filing date before that of the application on which priority is claimed.

EARLIEST FOREIGN APPLICATION(S) , IF ANY, FILED WITHIN 12 MONTHS PRIOR TO THIS APPLICATION

Country	Application No.	Date of Filing	Date of Issue	Priority Claimed	
		(day, month, yr.)	(day, month, yr.)	YES	NO

ALL FOREIGN APPLICATIONS, IF ANY, FILED MORE THAN 12 MONTHS PRIOR TO THIS APPLICATION

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorneys to prosecute this application and transact all business in the United States Patent and Trademark Office in connection herewith;

David E. Dougherty Registration No. 19,576 and Bruce H. Troxell Registration No. 26,592

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I hereby declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under § 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole or First Joint Inventor's Signature

Date

Wen-Li Kuo *Wen-Li Kuo*

March 25, 2000

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Citizenship

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20000325

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :
Wen-Li KUO :
Serial No.: Unassigned : Group Art Unit: Unassigned
Filed: May 19, 2000 : Examiner: Unassigned
For: IMPROVED STRUCTURE WATER :
SPRAYER LONG TUBE AND WATER :
PIPE CONNECTOR :

CHANGE OF ADDRESS

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

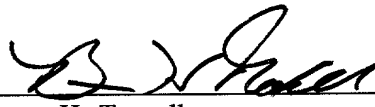
Please forward all further correspondence in this application to DOUGHERTY & TROXELL at their new address as follows:

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Respectfully submitted,

Date: May 19, 2000

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